

## CLAIMS

1. A CDMA receiving device for estimating a signal power and an interference noise power of a received signal for each of fingers, and combining a demodulated signal by using a signal-power-to-interference-noise-power ratio estimated from these estimated signal power and interference noise power,  
5 characterized by:

interference-noise-power calculation means (106, 206, 306, 406) for estimating an interference noise power for each of fingers in a current slot;

10 storage means (110, 217, 317, 425) for storing therein an estimated value for the interference noise power estimated for each of fingers in a last valid slot before a current slot;

first averaging means (108, 208, 308, 408) for averaging an estimated value for the interference noise power estimated in a current slot by said interference-noise-power calculation means  
15 (106, 206, 306, 406) and the estimated value for the interference noise power stored in said storage means (110, 217, 317, 425),

first judging means (115, 213, 313, 421) for judging in which slot each finger becomes valid after a radio link is established, and

20 first switching means (112, 215, 315, 423) for storing the interference noise power in a current slot estimated by said interference noise power calculation means (106, 206, 306, 406) into said storage means (110, 217, 317, 425) based on a judged

result by said first judging means (115, 213, 313, 421).

2. The CDMA receiving device according to Claim 1, wherein said first switching means (112, 215, 315, 423) stores the estimated value for the interference noise power estimated in the current slot by the interference noise power calculation means (106, 206, 306, 406) into said storage means (110, 217, 317, 425) if said finger is first judged to be valid after the radio link is established by said first judging means (115, 213, 313, 421).

3. The CDMA receiving device according to Claim 1 or 2 further comprising:

second judging means (223) for judging whether or not each finger is successively in a valid state for a given period of time;

5 second averaging means (221) for averaging the estimated values for the interference noise power among the fingers;

second switching means (219) for allowing said second averaging means (221) to average the average estimated value for the interference noise power, which is averaged by said first averaging means (208), based on a judged result by said second judging means (223); and

10 third switching means (210) for outputting either one of an averaged result by said first averaging means (208) and an averaged result by said second averaging means based on a judged result by said second judging means (223).

4. The CDMA receiving device according to Claim 3, wherein:  
said second switching means (219) allows said second  
average means (221) to use the estimated value for the interference  
noise power for a finger, if said finger is judged to be successively  
5 valid for a given period of time by said second judging means  
(223); and

said third switching means (210) outputs an averaged result  
by said second averaging means (221) instead of said estimated  
value for the interference noise power for said finger if said finger  
10 is judged to be valid though not continued for a given period of  
time by said second judging means (223).

5. The CDMA receiving device according to Claim 1 or 2,  
wherein said storage means (317) stores only the estimated value  
for the interference noise power of one slot before for each finger,  
said CDMA receiving device further comprising:

5 second judging means (319) for judging whether or not each  
of the fingers is successively in a valid state for a given period of  
time; and

second switching means (310) for switching whether or not  
the average estimated value for the interference noise power  
10 averaged by said first averaging means (308) is output based on a  
judged result by said second judging means (319).

6. The CDMA receiving device according to Claim 5, further comprising:

signal-power-to-interference-noise-power ratio calculation means (324) for calculating a  
5 signal-power-to-interference-noise-power ratio based on an output of said second switching means (310), and demodulated-signal combining means (328) for combining the demodulated signal based on a calculated result by said  
signal-power-to-interference-noise-power ratio calculation means  
10 (324); and

third switching means (326) for outputting the demodulated signal to said demodulated-signal combining means (328) based on the judged result by said second judging means (319).

7. The CDMA receiving device according to Claim 5 or 6, wherein:

said second switching means (310) outputs an output of said first averaging means (308) if said finger is judged to be  
5 successively valid for a given period of time by said second judging means (319), and does not output the average estimated value for the interference noise power averaged by said first averaging means (308), if said finger is judged not to be successively valid for a given period of time by said second judging means (319); and

10 said third switching means (326) outputs said demodulated signal to said demodulated-signal combining means (328), if said

finger is judged to be successively valid for a given period of time by said second judging means (319), and does not output the demodulated signal to said demodulated-signal combining means (328), if said finger is judged not to be successively valid for a given period of time by said second judging means (319).

8. The CDMA receiving device according to Claim 1 or 2, wherein said storage means (425) stores therein only the estimated value for the interference noise power of one slot before for each finger, said CDMA receiving device further comprising:

demodulation means (410) for demodulating the received signal by using an arbitrary synchronization timing, second interference-noise-power calculation means (412) for estimating the interference noise power in said current slot for said demodulated signal demodulated by said demodulation means (410), second averaging means for averaging an interference noise power in said current slot estimated by said second interference noise power calculation means (412) and the estimated value for the interference noise power stored in said storage means (425); and

second judging means (419) for judging whether or not said finger is successively in a valid state for a given period of time, and second switching means (416) for outputting either one of an averaged result by said first averaging means (408) and an averaged result by said second averaging means (414) based on the judged result by said second judging means (419).

9. The CDMA receiving device according to Claim 8, wherein said second switching means (416) outputs an output of said first averaging means (408), if said finger is judged to be successively valid for a given period of time by said second judging means (419),  
5 and outputs an output of said second averaging means (414), if said finger is judged not to be successively valid for a given period of time by said second judging means (419).